



Midvale Slag Superfund Site

Operable Unit 2 Proposed Plan

Midvale, Utah



May 2002

EPA ANNOUNCES PROPOSED PLAN

This proposed plan identifies the preferred alternative for cleaning up the contamination at the southern portion of the Midvale Slag Superfund site, also known as Operable Unit (OU) 2. This proposed plan summarizes U.S. Environmental Protection Agency (EPA) and the Utah Department of Environmental Quality (UDEQ)'s reasons for recommending this proposed remedy and also summarizes other cleanup alternatives evaluated for use at this site. Additionally, this proposed plan describes a redevelopment alternative that cannot be selected by EPA but that could be implemented by other parties at the site and would comply with the standards of the preferred alternative.

This document is issued by EPA, the lead agency for site activities, and by UDEQ, the support agency. EPA, in consultation with UDEQ, will select a final remedy for the site after reviewing and considering all information submitted during the 30-day public comment period. EPA, in consultation

Midvale City Council Chambers are wheelchair accessible from the west parking lot. Those needing special assistance should contact Dave Allison at 801-536-4479 or TDD# 801-536-4414 by June 10th.

Dates to Remember

We want to hear from you!



Public Comment Period:

May 20 - June 19, 2002

EPA will accept written comments on the proposed plan during the public comment period. Comment letters must be postmarked by June 19, 2002 and should be submitted to Fran Costanzi, Remedial Project Manager, Mail code 8EPR-SR at the EPA address below, or by email to costanzi.frances@epa.gov. Requests for extension of the comment period must be made in writing to Fran Costanzi and received by 5:00 p.m. MDT on Friday, June 14, 2002.

Public Meeting:

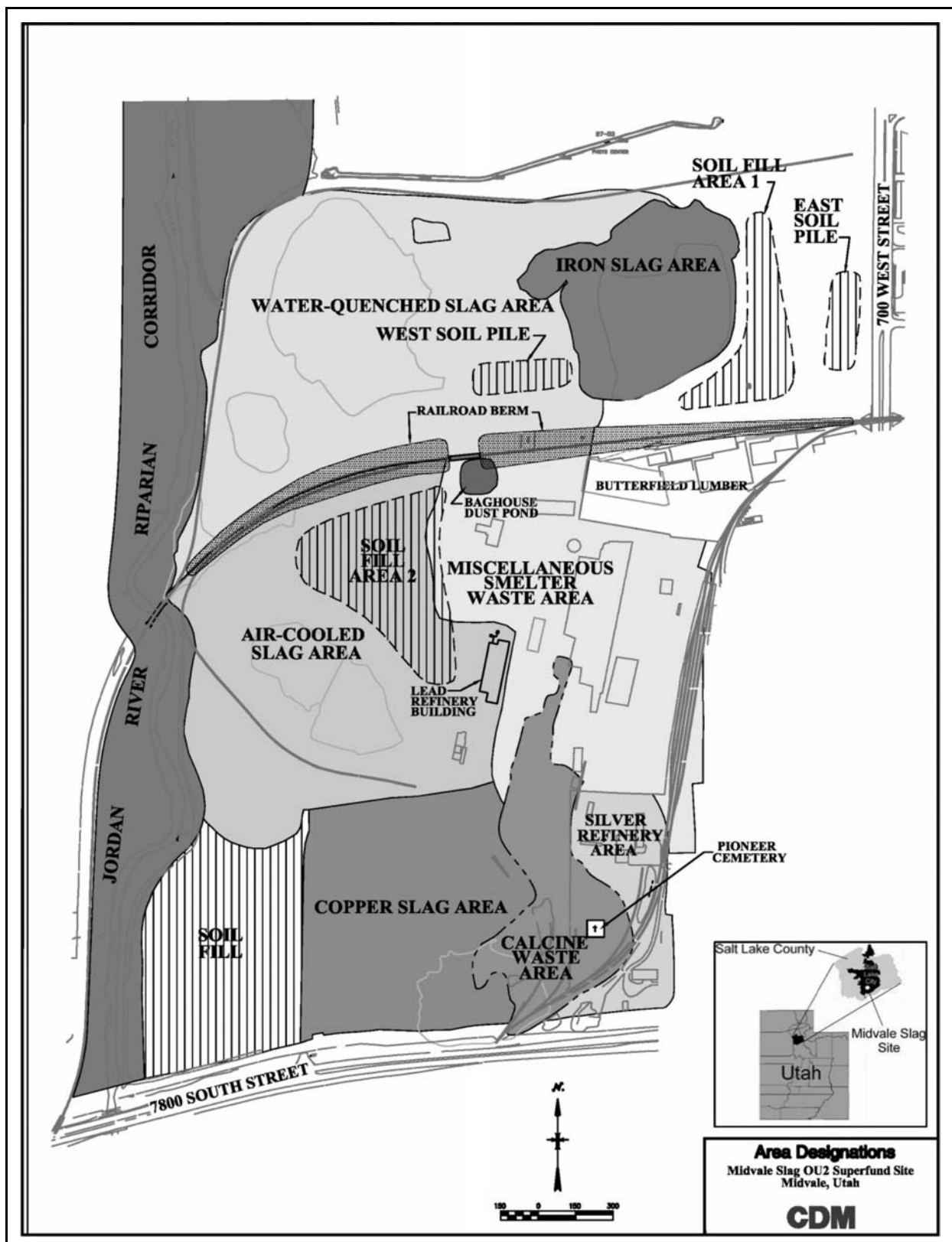
June 13, 2002, 6:00 p.m. - 8:30 p.m.

EPA and UDEQ will hold a public meeting to explain the proposed plan, the alternatives presented in the feasibility studies, and the redevelopment alternative. Oral and written comments also will be accepted at the meeting. The meeting will be held in City Council Chambers at Midvale City Hall, 655 West Center Street, Midvale, UT.

For more information, see the Administrative Record at the following locations:



Tyler Branch Library	EPA Region 8
8041 South Wood	999 18 th Street
Midvale, UT 84047	Suite 300
801-944-7641	Denver, CO
Hours: Mon. - Thu.	80202-2466
10 a.m. - 9 p.m.	303-312-6473
Fri. and Sat.	Hours: Mon. - Fri.
10 a.m. - 6 p.m.	8 a.m. - 4 p.m.



with UDEQ, may modify the preferred alternative or select another response action presented in this plan based on new information or public comments. The public is encouraged to review and comment on all the alternatives presented in this proposed plan.

EPA is issuing this proposed plan as part of its public participation responsibilities under Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This proposed plan summarizes information that can be found in greater detail in the Administrative Record file for this site. EPA and UDEQ encourage the public to review these documents to gain a more comprehensive understanding of the site and Superfund activities that already have been conducted at the site.

SITE HISTORY

The Midvale Slag site is 12 miles south of Salt Lake City and is located mostly in Midvale City. The approximate site boundaries are between 7800 South and 6400 South (Winchester Avenue) and between the west bank of the Jordan River and 700 West and Holden Street. The site covers approximately 450 acres.

Ore processing and smelting took place in the Midvale area for nearly 100 years. Milled ores were smelted to produce lead, arsenic, copper and other metals. The Midvale Slag site was the location of a large smelter that also created wastes that were left on the site. Some of these substances are hazardous and must be cleaned up before the property can be reused.

EPA placed both the Midvale Slag smelter site and the Sharon Steel mill site, located to the south, on the National Priorities List in

February 1991. Placement on the National Priorities List allows cleanup using Superfund money. By 1999, EPA and UDEQ had cleaned up the mill site by capping the tailings pile, building a wetlands, and cleaning up soil at 600 properties in Midvale City. By that date, the Agencies had also completed work on several parts of the Midvale Slag site, cleaning up a mobile home park and the northern part of the site. Other work included fencing the property, removing explosives from an abandoned laboratory, removing arsenic-contaminated soil from the Butterfield Lumber property, and cleaning up the historic pioneer cemetery.

This proposed plan addresses the cleanup of the southern part of the Midvale Slag site where the smelter itself was located and the surrounding area, collectively known as Midvale Slag OU2. OU2 lies between 7200 South and 7800 South and covers 180 acres.

A series of studies of OU2 identified what contamination exists and evaluated ways to cleanup this contamination. EPA and UDEQ encourage the public to review these documents in the Administrative Record for the site. This proposed plan summarizes the information from those studies.

With the help of a \$100,000 EPA grant, Midvale City formed a stakeholder group to explore future possibilities for the site. From that process, Midvale City produced a reuse plan titled *Bingham Junction Reuse Assessment and Master Plan*. That plan describes a potential future vision for the site and was adopted by Midvale City Council in August 2000. In November 2001, Midvale City Council also adopted the Bingham Junction Ordinance. The ordinance establishes a process for development that allows for residential, commercial, and

recreational uses on the property. Bingham Junction is a forward-looking name for the site, anticipating its transformation following the cleanup.

Because the Sharon Steel and Midvale Slag sites make up almost 20 percent of the city and most of the developable vacant land in Midvale, reuse is critical to the community. EPA and UDEQ have been working with stakeholders to develop a protective cleanup plan that is compatible with the city's redevelopment plan.

SITE CHARACTERISTICS

There are two main areas of OU2. One is the low-lying Jordan River floodplain, including the riparian zone along the river. The other is the terrace, which is higher in elevation above the floodplain. The former smelter buildings were located on the terrace.

Categories of Waste

Several types of wastes remain on OU2 from smelting operations. EPA created four categories of wastes based on the level of potential hazard.

- Category I materials pose the greatest threat. They contain high levels of contamination, especially arsenic. Rain or snow melt can cause contaminants to soak through the soil to the groundwater. EPA calls these "principal threat" wastes because they are very toxic and can move through the environment.

- Category II materials have the next highest levels of contamination. They pose a significant risk if they come in contact with people. They also can

What is a "Principal Threat"?

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable. The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is a material that includes or contains hazardous substances, pollutants, or contaminants that acts as a reservoir for migration of contamination to groundwater, surface water, or air, or acts as a source for direct exposure. Contaminated groundwater is generally not considered to be a source material. Principal threat wastes are those source materials that are considered to be highly toxic or highly mobile that generally cannot be reliably contained or that would present a significant risk to human health or the environment should exposure occur. For this site, Category I waste is considered to be a principal threat waste.

contaminate groundwater.

- Category III material is less toxic but could be dangerous in the long term if located on the surface around a home. This material does not contaminate groundwater.

- Category IV material is the black slag on site. Slag is the least toxic and does not contaminate groundwater.

Types of Contamination

Slag

The majority of OU2 is covered with wastes from the ore smelting processes. The flood plain area is mostly covered by large, black piles of slag, which are waste products from the smelting process. Slag is a Category IV waste.

Mixed Smelter Waste

Mixed smelter wastes (MSW) are a variety of wastes from the smelting process, plus contaminated soils.

The former baghouse dust pond is located on the flood plain, next to the terrace. The baghouse dust pond contains highly contaminated material consisting of small, dust-like particles from an early air pollution control system. Fumes from the smelting process passed through a series of wool bags. The contamination was captured and concentrated in the bags rather than going up and out of the 450-foot smelter stack. Concentrated metals that were not able to be recycled back into the process were washed to the baghouse dust pond. The water in this pond has evaporated, leaving the concentrated baghouse dust. The baghouse dust is a Category I waste.

Most of the smelter buildings were located on the terrace area. These buildings were knocked down after the smelter closed, and the debris from demolition was pushed into the building basements. Tailings from the adjacent mill were also dumped in the building basements. In addition to the building demolition debris and tailings, there are wastes from other smelting processes. The wastes in the area of the former smelter

buildings are mostly Category II and Category III.

Calcine is a waste material from the processing of arsenic-containing ore and is located near the Pioneer Cemetery. This waste material is considered Category II.

The level of contamination in the soil beneath wastes varies, but most of the soil is considered to be Category II or III. There are also soil piles located on OU2. Some of these soil piles are from previous cleanups where the contaminated soil was excavated and placed in piles. These soil piles contain high levels of contamination. At least one pile is known to be clean fill.

Jordan River Riparian Area

The Jordan River riparian area is made up of the river area, the banks on both sides of the river, and the land located on top of the banks. Sampling results indicate little site-related contamination in the surface water or the sediment. However, there is contamination in the banks and surrounding soil. Some of the contamination in this area is from the Midvale Slag site, but it appears some of the contamination was washed down from other sources upstream and deposited along the banks in the floodplain area. There is soil contamination on the surface and in deeper subsurface levels. Most of the contamination in the riparian area is Category III. Category IV material (slag) is also present.

Groundwater

There are two aquifers present at the site and another area called the Perched Unit.

The large Deep Principal Aquifer (Deep

Aquifer) is located under the site and much of the Salt Lake Valley. At the Jordan River, it is approximately 145 feet underground. This aquifer is used as a drinking water source. The site is not contaminating this aquifer.

Another aquifer is located much nearer to the ground surface. The Upper Sand and Gravel Aquifer (Shallow Aquifer) is 65 feet under the terrace and 5 feet below the banks adjacent to the Jordan River. This aquifer currently flows into the Jordan River. Contamination from the site has been measured in the Shallow Aquifer. Arsenic is the main contaminant from the site that is present in this groundwater. Site contamination can be measured in approximately the top 20 to 30 feet of this aquifer. At lower levels, the site contamination becomes diluted and can no longer be measured.

A solvent called PCE (tetrachloroethene) is also present at low levels in this aquifer. It originates east of the site and flows under parts of the community and onto the site. Additional work, separate from the Midvale Slag site work, will be conducted to investigate that contamination.

There is a confining layer of dense soil and clay separating the Shallow Aquifer from the Deep Aquifer that prevents contamination from reaching the Deep Aquifer.

A Perched Unit is located approximately 30 to 40 feet under the terrace. The Perched Unit is not a true aquifer but an area where contaminated water pools because the soil structure is tight and does not allow water to pass through quickly. The contaminated water in this area flows underground toward the Jordan River. As it flows by the terrace edge, it is able to flow downward and join the

water in the Shallow Aquifer. The Perched Unit is not present under the floodplain area.

SCOPE AND ROLE OF THE ACTION

The site has two operable units. OU1 is the northern part of the site and has been cleaned up. OU2 is the southern part of the site, making up the historic smelter location and associated waste material. This proposed plan describes the cleanup alternatives for OU2.

Cleanup of OU2 will be the final cleanup action for the site. EPA and UDEQ intend that the remedy selected for OU2 not only be protective of human health and the environment and comply with federal and state environment laws but also allow for redevelopment of the site.

EPA and UDEQ will conduct reviews of the site every 5 years to ensure all the cleanup work remains effective.

SUMMARY OF SITE RISKS

As a part of the site studies, EPA evaluated whether contamination at the site might harm people's health or the health of ecological receptors (plants and wildlife). This type of study is called a baseline risk assessment. The baseline risk assessment evaluated risk based on current and potential future site use. EPA used information from the *Bingham Junction Reuse Assessment and Master Plan* to help identify how the site might be used in the future. The site may be used for homes, businesses, or light industry. In addition, the area along the bank of the Jordan River may be used for wildlife habitat as well as a recreational park for people.

The baseline risk assessment focused on the

following scenarios based on current uses and likely future uses:

Current scenario:

- Teenagers trespassing on the site
- Plants and wildlife at the site

Future scenarios:

- Residents (adults and children living at the site)
- Workers in businesses, industry, and construction
- Recreational visitors (children playing at the park)
- Fishermen
- Plants and wildlife in the recreational park

Results of the baseline risk assessment indicate that some type of action is necessary to make the site safe for future use. It is EPA and UDEQ's judgement that the preferred alternative identified in this proposed plan, or one of the other active measures considered in the proposed plan, is necessary to protect people, plants, and wildlife from contamination at the site.

Human Health Risks

Lead and arsenic are responsible for the majority of risk to people at the site. The baseline risk assessment indicated clear risk to humans if no action is taken. For example, the cancer risk to potential future residents is 4 in 100. This means that if site conditions are not changed, 4 cancers may occur for every 100 people living on the site over a 70-year time frame. Results also indicated high potential for non-cancer health effects to future residents. The estimate for non-cancer health hazards for future residents was 500, while EPA's threshold is 1.

What Are the "Chemicals of Concern"?

EPA and UDEQ have identified 20 chemicals at the site that pose unacceptable risk to human health and the environment. Of these chemicals of concern, the two chemicals described below are of primary concern at the site.

Arsenic Arsenic is detected in the wastes, slag, soil, and groundwater on site.

Arsenic does not easily accumulate in the body. Most arsenic that is absorbed into the body is efficiently passed in the urine. Harmful health effects related to long term exposure to too much arsenic include lung and skin cancer and digestive tract problems.

It is important to remember that these same symptoms and illnesses can be caused by a variety of other health problems. It is best to ask a doctor about the causes of any health problems.

Lead Lead is also present on site, mostly in the wastes, slag, and soil.

Lead can accumulate in the body over time if exposure is frequent or continuous. It can cause harm if present above certain levels in the human body. Lead can affect the development of the nervous system, including impaired learning ability and hearing, and the reproductive system. Children are especially vulnerable to lead contamination for the following reasons: Their bodies and brains are still developing and they absorb more lead than adults, and children often play outside where they are more likely to be exposed to lead in the soil. They are more likely to put dirty fingers and toys in their mouths.

Ecological Risks

Results of the baseline risk assessment indicate that contamination at the site may harm wildlife and plants. Based on site development plans, wildlife and plants (other than landscaping) are not expected throughout most of the site in the future. However, a recreational park is planned for land along the bank of the Jordan River. There is currently a park on the western side of the river. The park areas can provide habitat for wildlife and plants. Also, the

water and sediments in the Jordan River are habitats for fish and other ecological populations.

Studies show that the site is not currently adding metals to the river. However, there is contamination in the soils on the banks of the river, both at the surface and deeper down. Contamination could get into the river from the soil washing or falling into the river from unstable banks. The Jordan River could carry contamination downstream. Action is necessary to keep contamination in the bank from getting into the river.

What is Risk and How Is It Calculated?

A Superfund human health risk assessment estimates the "baseline risk". This is an estimate of the likelihood of health problems occurring if no cleanup action was taken at a site. To estimate the baseline risk at a Superfund site, EPA undertakes a four-step process:

- Step 1: Analyze Contamination
- Step 2: Estimate Exposure
- Step 3: Assess Potential Health Dangers
- Step 4: Characterize Site Risk

In Step 1, EPA looks at the concentration of contaminants found at a site as well as past scientific studies on the effects these contaminants have had on people (or animals, when human studies are unavailable). Comparisons between site-specific concentrations and concentrations reported in past studies help EPA to determine which contaminants are most likely to pose the greatest threat to human health.

In Step 2, EPA considers the different ways that people might be exposed to the contaminants identified in Step 1, the concentrations that people might be exposed to, and the potential frequency and duration of exposure. Using this information, EPA calculates a "reasonable maximum exposure" (RME) scenario, which portrays the highest level of human exposure that could reasonably be expected to occur.

In Step 3, EPA uses the information from Step 2, combined with information on the toxicity of each chemical, to assess potential health risks. EPA considers two types of risk: cancer risk and non-cancer risk. The likelihood of any kind of cancer resulting from a Superfund site is generally expressed as an upper bound probability; for example, a "1 in 10,000 chance". In other words, for every 10,000 people that could be exposed for a 30-year period, one extra cancer *may* occur as a result of exposure to site contaminants. An extra cancer case means that one more person could get cancer than would normally be expected to from all other causes. For non-cancer effects, EPA calculates a "hazard index". The key concept here is that a "threshold level" (measured usually as a hazard index of less than 1) exists below which non-cancer effects are no longer predicted.

In Step 4, EPA determines whether site risks are great enough to cause health problems for people at or near the Superfund site. The results of the three previous steps are combined, evaluated, and summarized. EPA adds up the potential risks from the individual contaminants and exposure pathways and calculates a total site risk.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives provide a general description of what the cleanup will accomplish. These objectives are used to develop the alternatives described in the next section.

Slag Remedial Action Objectives

- Prevent unacceptable exposure to current and future human and ecological populations due to direct contact, inhaling, or eating contaminated slag or surrounding soil.
- Ensure that future migration of slag is protective of surface water.

Mixed Smelter Waste Remedial Action Objectives

- Prevent unacceptable exposure risks to current and future human populations due to direct contact, eating, or inhaling smelter materials or surrounding contaminated soil.
- Prevent unacceptable exposure risks to current and future ecological populations due to direct contact, eating, inhaling, or uptake from smelter materials or surrounding contaminated soil.
- Ensure that the future migration of contaminants from the smelter materials is within limits considered protective of groundwater.
- Prevent smelter materials from entering the Jordan River from runoff.

Groundwater Remedial Action Objectives

- Prevent unacceptable exposure to current and future human populations due to direct contact or drinking contaminated groundwater.
- Prevent contaminated groundwater from moving into uncontaminated parts of the Shallow Aquifer and into the Deep Aquifer.
- Ensure that contaminated groundwater reaching the Jordan River is at levels protective of the environment and the designated uses of the river.
- Restore groundwater to beneficial use, if possible.

Redevelopment Remedial Action Objectives

While not remedial action objectives under the strict definition of the term, the objectives below are also considered in the development and evaluation of alternatives.

- Facilitate redevelopment of the site consistent with current and reasonably anticipated future land uses.
- Recognize the potential for safe, environmentally protective, beneficial reuse of slag materials on and off site.

Table 1 Summary of Remedial Alternatives - Midvale Slag OU2* (*Gray shading indicates alternatives that were screened out due to excessive costs or effectiveness concerns.)		
Medium	Report Designation	Description of Alternative
Slag	S-1	No Further Action
	S-2	Excavation and Offsite Disposal of Slag
	S-3	Consolidate and Cover Slag
	S-4	Regrade and Cover Slag
	S-5	Beneficial Reuse of Slag
Mixed Smelter Waste	MSW-1	No Further Action
	MSW-2	Excavation and Offsite Disposal of Category I MSW; Construct Appropriate Cover Over Category II and III MSW
	MSW-3	Excavation and Offsite Disposal of Category I MSW; Onsite Consolidation of Category II and III MSW with Appropriate Cover
	MSW-4	Excavation and Offsite Disposal of Category I MSW; Segregation and Onsite Consolidation of Category II and III MSW with Appropriate Cover
	MSW-5	Excavation and Offsite Disposal of all MSW in RCRA Subtitle C Landfill
	MSW-6	Excavation and Onsite Disposal of all MSW in RCRA Subtitle C Landfill
	MSW-7	Excavation and Offsite Disposal of Category I MSW; Excavation (Excluding Perched Unit) and Segregation of Category II and II MSW with Treatment of Category II MSW, Onsite Consolidation, and Appropriate Cover
	MSW-8	Excavation and Offsite Disposal of Category I MSW; Excavation (Including Perched Unit) and Segregation of Category II and II MSW with Treatment of Category II MSW, Onsite Consolidation, and Appropriate Cover
Groundwater	GW-1	No Further Action
	GW-2	Limited Action with Alternate Concentration Limits
	GW-3	Groundwater Extraction and Treatment - Multiple Wells
	GW-4	Groundwater Extraction and Treatment - Single High Yield Well
	GW-5	Groundwater Extraction and Treatment - French Drain
	GW-6	In Situ Chemical Oxidation
Redevelopment Alternative	Not in Reports	An alternative that could be implemented by the property owner and developers which meets the performance standards of EPA's selected alternative, is protective of human health and the environment, and complies with applicable or relevant and appropriate requirements (ARARs).

SUMMARY OF REMEDIAL ALTERNATIVES

Remedial alternative from each of the three Focused Feasibility Studies (Slag, Mixed Smelter Waste, and Groundwater) are summarized in Table 1. The alternative numbers correspond to the numbers in the Focused Feasibility Study. Gray shading in Table 1 indicates alternatives that were screened out due to excessively high costs or effectiveness concerns. Institutional controls, which are administrative or legal controls such as City zoning requirements, will be needed throughout OU2 under each alternative.

Redevelopment Alternative

The Redevelopment Alternative was developed by the current owner of most of the site in conjunction with representatives from Midvale City and reviewed by EPA and UDEQ. Although EPA and UDEQ strongly support redeveloping Superfund sites, the law only allows them to spend money to clean up sites, not redevelop them. Therefore, this alternative cannot be selected by EPA as the cleanup remedy. It is, however, designed to be equivalent to the cleanup plan selected by EPA and, therefore, acceptable if someone other than EPA and UDEQ pays for the redevelopment part of the work.

This alternative is similar to many of the other alternatives since it involves excavating the Category I waste and disposing of it off site. It is basically a regrade and cover remedy for Category II wastes. If residences are present on site, Category III wastes will also be covered. The Category IV waste (slag) would be beneficially reused, mostly as structural fill. Rather than a vegetative cover for the wastes, other covers would be allowed, including roads, parking lots,

buildings, and sidewalks. Vegetative covers would also be present in some places, too, such as in park areas.

Institutional controls will be needed throughout OU2 under this alternative.

EVALUATION OF ALTERNATIVES

Nine criteria are used to evaluate the different remediation alternatives individually and against each other in order to select a remedy. This section of the proposed plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the options under consideration. The nine evaluation criteria are discussed further in Table 2. A more detailed analysis of the alternatives can be found in the Focused Feasibility Studies for Slag, Mixed Smelter Waste, and Groundwater.

A primary part of the development and evaluation of mixed smelter waste and groundwater alternatives is whether or not the goal of the alternative is to restore groundwater to beneficial use. This is not as relevant to the slag alternatives since contaminants from the slag are not degrading groundwater. EPA expects to restore groundwater if it can be done in a reasonable time frame. If restoration of groundwater is a goal, then the alternatives for the mixed smelter wastes need to minimize as much migration of contaminants into the groundwater as possible. If restoration of groundwater is not a goal, then less rigorous measures are appropriate for addressing the mixed smelter wastes.

For clarity, the alternatives for mixed smelter waste and groundwater have been separated into two groups based on whether or not restoration of groundwater is a goal. The shaded alternatives in Table 3 are the alternatives that have restoration of the

Table 2
Nine Evaluation Criteria for Superfund Remedial Alternatives

Overall Protection of Human Health and the Environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through treatment, engineering controls, or institutional controls.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

Long-Term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.

Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Short-Term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.

Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time, in terms of today's dollar value. Feasibility study cost estimates are expected to be within a range of +50 to -30 percent.

State Acceptance considers whether the State of Utah agrees with EPA's analyses and preferred alternative, as described in the Remedial Investigation/Feasibility Study documents and Proposed Plan.

Community Acceptance considers whether the local community agrees with EPA's analyses and preferred alternative. Comments on the Proposed Plan are an important indicator of community acceptance.

Shallow Aquifer as a goal.

Computer modeling has been conducted to better understand how the arsenic contamination in the groundwater will move over time and how long it will take until cleanup goals are reached. The most aggressive pumping, combined with extensive excavations on site, will take at least 90 years but could take up to 300 years to reach cleanup goals. Aggressive pumping could have

negative impacts on groundwater levels, the water flow in the Jordan River, and nearby wetlands. The modeling shows that because of the way arsenic clings to soil and the slow way it moves, it will only flush out of the Shallow Aquifer and site soils over a long period of time even if it is actively pumped out.

Table 3
Summary of Remedial Alternative Costs and Construction Time Frame
(Gray shading indicates alternatives that have restoration of groundwater as a goal)

Medium	Alternative	Costs		
		Capital	Annual Operation and Maintenance*	Present Value
Slag	S-1 No Further Action	\$0	\$0	\$28,125
	S-3 Consolidate and Cover	\$18,002,500	\$46,600 - \$93,200	\$18,932,400
	S-4 Regrade and Cover	\$13,350,100	\$24,800 - \$49,800	\$13,881,100
	S-5 Beneficial Reuse	\$22,974,200	\$16,400 - \$20,300	\$23,299,700
	MSW-1 No Further Action	\$0	\$0	\$28,125
Mixed Smelter Waste (Offsite means disposal at an offsite hazardous waste facility.)	MSW-2 Cat I Offsite; Cover Cat II and III Onsite	\$17,549,500	\$22,600 - \$35,200	\$18,448,300
	MSW-3 Cat I Offsite; Consolidate and Cover Cat II and III Onsite	\$17,779,300	\$22,600 - \$30,000	\$18,603,800
	MSW-4 Cat I Offsite; Segregate and Cover Cat II and III Onsite	\$19,248,100	\$13,880 - \$15,620	\$20,072,600
	MSW-6 Cat I, II, and III all into Onsite Hazardous Waste Facility	\$67,631,400	\$24,800 - \$29,200	\$68,452,400
	MSW-7 Cat I Offsite; Cat II Material Treated, Consolidated and Covered Onsite	\$46,355,300	\$13,880 - \$15,620	\$47,179,800
	GW-1 No Further Action	\$0	\$0	\$49,700
	GW-2 Limited Action and Alternate Concentration Limits	\$357,800	\$157,300 - \$314,600	\$3,377,100
Ground Water	GW-3 Extraction and Treatment, Multiple Wells	\$5,047,900	\$996,500 - \$1,171,100	\$20,827,000
	GW-4 Extraction and Treatment, One High-Yield Well	\$3,426,100	\$948,300 - \$1,100,300	\$18,081,300
	GW-5 Extraction and Treatment, French Drain	\$5,470,900	\$791,100 - \$943,000	\$18,321,200

* Periodic costs such as equipment and five year reviews are not included.

The following is a brief discussion of the nine criteria evaluation of the remaining alternatives.

1. Overall Protection of Human Health and the Environment

The no action alternatives are included as a baseline for comparison to other alternatives. These no action alternatives are not protective of human health and the environment and therefore are not discussed further. The remaining alternatives in Table 3 are protective of human health and the environment.

2. Compliance with ARARs

All alternatives remaining in Table 3 comply with ARARs and do not require an ARAR waiver.

3. Long-Term Effectiveness and Permanence

The slag alternatives are relatively similar in performance and would be effective in the long-term. All mixed smelter waste and groundwater alternatives would be effective in the long-term if maintained properly. Alternatives that involve extensive maintenance are more likely to have performance issues in the future. Mixed smelter waste alternatives MSW-2, 3, and 4 are relatively easy to maintain over time, while MSW-6 and 7 would be more difficult. There is not a significant advantage to consolidating or segregating the waste (MSW-3 and 4) that would improve long-term protectiveness. Groundwater alternative GW-2 would also be relatively easy to maintain over time compared to the other 3 alternatives. Equipment used in groundwater alternatives GW-3, 4, and 5 would operate for a long period of time. Because of this, equipment would need to be replaced several times.

4. Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment

The slag alternatives do not involve treatment except with some beneficial reuse options. The principal threat waste, Category I, will be taken off site, and although there are no plans to treat it before transport, it will be disposed of as required for hazardous waste under Resource Conservation and Recovery Act (RCRA) Subtitle C. The remaining categories (II and III) are not expected to be treated. GW-3, 4, and 5 alternatives do include treatment of the groundwater contaminants. GW-2 does not include treatment.

Treatment of soils and other wastes usually involves mixing with another material and typically increases the resulting volume of material to be handled.

5. Short-Term Effectiveness

The slag alternatives can all be implemented and effective quickly. The mixed smelter waste alternatives will need varying amounts of time to be implemented, with the simplest (MSW-2) able to be implemented and effective the soonest. There are no groundwater alternatives that will be effective in the short term due to the nature of the contamination.

6. Implementability

The slag alternatives are relatively simple to implement. Mixed smelter waste that involves covers, with Category I waste taken offsite (MSW-2, 3, and 4), is also relatively easy to implement; where as, MSW-6 and 7 would be more difficult. Groundwater alternative GW-2 would also be relatively easy to implement, though GW-3, 4, and 5 have significant implementability concerns due to the cost and logistics involved with maintaining an active treatment system for hundreds of years.

7. Cost

Costs are shown on Table 3. The slag alternatives are relatively similar in costs, both for construction and for maintaining over time. Mixed smelter waste that involves covers, with Category I waste taken off site (MSW-2, 3, and 4), is significantly less expensive than MSW-6 and 7 while still being protective. Groundwater alternative GW-2 would also be relatively inexpensive to maintain over time compared to the other three alternatives. GW-2, 3, and 4 are very expensive, especially considering these alternatives must be maintained for hundreds of years. Treatment plants will need to be rebuilt when they wear out over time.

8. State Acceptance

UDEQ supports the preferred alternative.

9. Community Acceptance

Community acceptance of the preferred alternative will be evaluated after the public comment ends and will be described in the Record of Decision for the Site.

SUMMARY OF THE PREFERRED ALTERNATIVE



The preferred alternative for cleaning up the Midvale Slag OU2 site is:

GW-2	Limited Action with Alternate Concentration Limits.
MSW-2	Excavation and Offsite Disposal of Category I MSW; Construct Appropriate Cover Over Category II and III MSW. This cover is protective while remaining

flexible for redevelopment options.

S-4 Regrade and Cover Slag (Category IV)

The preferred alternative is selected over the others because it provides measures to protect human and ecological populations from exposure to site chemicals. The preferred alternative will ensure that groundwater from the site does not cause state water quality standards to be exceeded in the Jordan River. The alternate concentration limits are set using information about the flow of the river and the flow in the Shallow Aquifer and the level of contaminants in each. Monitoring wells will be installed and the water will be sampled regularly to ensure that concentration levels do not rise above the alternate concentration limits and, therefore, remain protective. The preferred alternative is technically and administratively implementable and reasonable from a cost perspective. Contamination from the Shallow Aquifer will flush out over time and, since there will not be active pumping, there will not be negative impacts to area water levels and wetlands.

The principal threat from mixed smelter waste will be removed from the site since the highly contaminated Category I waste will be excavated and disposed of off site. The lesser threats from the Category II wastes will be addressed by construction of an appropriate cover over those wastes. The appropriate cover is different than an engineered cap designed to prevent water from infiltrating the wastes. The cover will consist of soil or other materials and will not be designed to be impermeable to water. It will provide flexibility for various redevelopment uses that may be built on top of the cover. (For residential uses, Category III wastes will be addressed by construction

of an appropriate cover.) Slag (Category IV waste) will also be regraded and covered.

A stakeholders group will be formed to focus on the Jordan River Riparian corridor. Some of the work to be done in this area involves cleanup of contamination from the Midvale Slag site. This will involve bank stabilization to prevent site contaminants from discharging into the river. Other work not related to site contamination needs to be done. Examples of this are creation of a recreational park on the eastern bank and improvements to restore habitat in that section of the Jordan River. These activities are outside of what EPA and UDEQ can pay for under the Superfund program. It will be more cost effective, however, if the cleanup work can be coordinated with the other work.

The redevelopment alternative is equivalent to the preferred alternative and can be implemented in its place if someone other than EPA and UDEQ is providing funding for the redevelopment portion of the work. It is anticipated that details of how this alternative will be implemented will be developed in a legal agreement and the design documents that follow that agreement.

If the preferred alternative is implemented instead of the redevelopment alternative, it would still allow for redevelopment to take place at the site.

Based on the information available at this time, EPA and UDEQ believe the preferred alternative would be protective of human health and the environment, would comply with ARARs, would be cost effective, and would use permanent solutions to the maximum extent practicable.

The preferred alternative can change in response to public comment or new information. For this reason, EPA and UDEQ

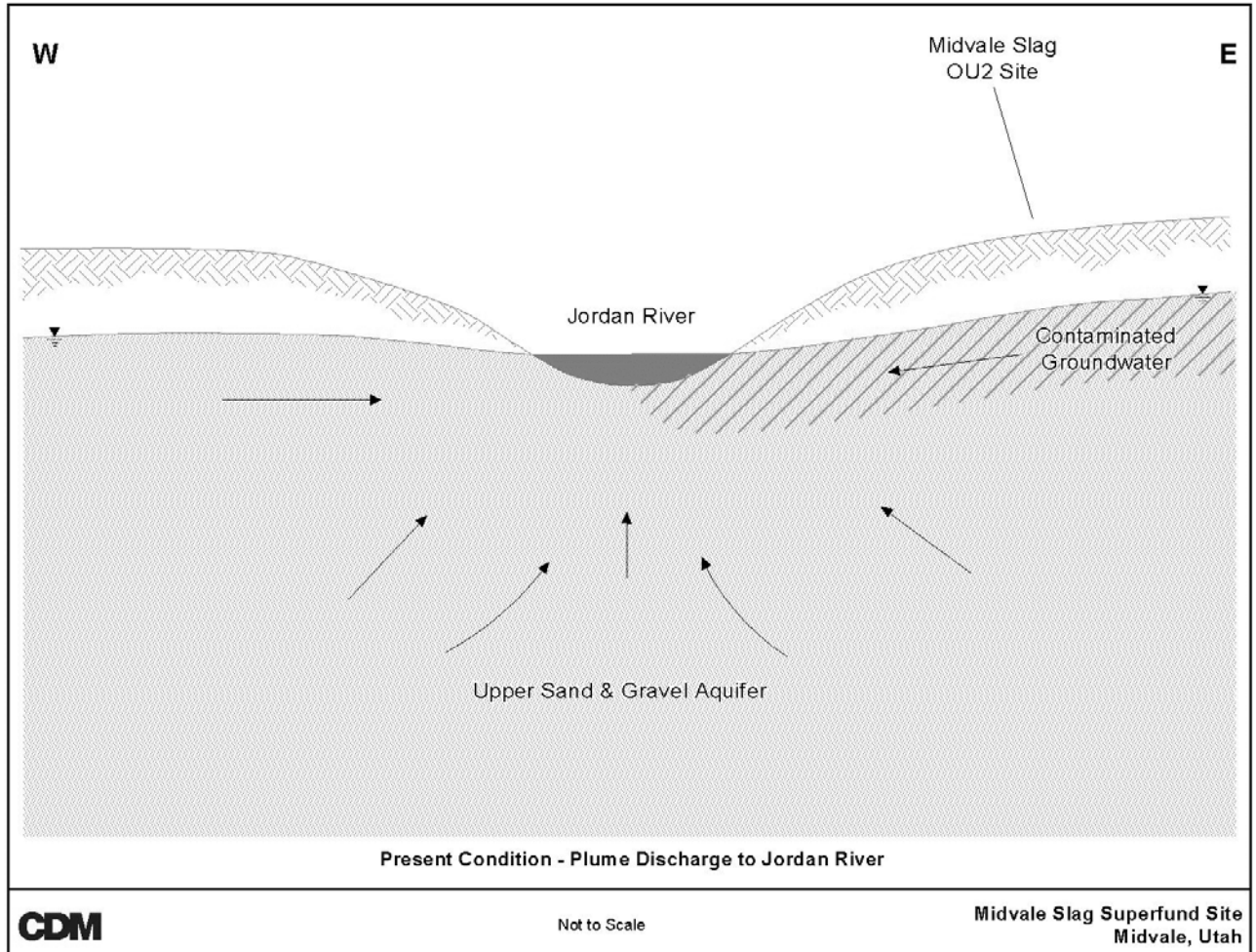
encourage the public to review and comment on all the alternatives presented in this proposed plan.

COMMUNITY PARTICIPATION

EPA and UDEQ provide information regarding the cleanup of the Midvale Slag Site to the public through public meetings, the Administrative Record for the Site, announcements published in the *Salt Lake Tribune* and *Deseret News*, and on the site Website at <http://epa.gov/region8/sf/midvale/>. EPA and UDEQ encourage the public to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted at the site.

EPA has given a grant to a local citizens' group, Citizens for a Safe Future for Midvale, so that they may more fully participate in the process for the cleanup and redevelopment of the site. This citizens' group is open to the public and meets monthly on the first Wednesday of the month. For more information, please contact either David May, President, at 801-561-9278 or Michelle Baguley, Grant Administrator, at 801-446-9603.

The dates for the public comment period; the date, location, and time of the public meeting; and the locations of the Administrative Record files are provided on the front page of this proposed plan.



**For further information on the Midvale
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**For Questions on the Redevelopment
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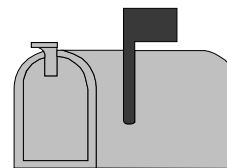
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**For Questions on Midvale City's
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Use This Space to Write Your Comments

Your input on the Proposed Plan for the Midvale Slag site is important to EPA and UDEQ. Comments provided by the public are valuable in helping select a final cleanup remedy for the site.



You may use the space below to write your comments, then fold and mail this page. Comments must be postmarked by June 19, 2002. If you have any questions about the comment period, please contact Nancy Mueller at 303-312-6602 or Fran Costanzi at 303-312-6571. Nancy and Fran may also be contacted through EPA's toll-free number at 1-800-227-8917. Those with access to email may submit their comments to EPA via the Internet at the following email address: costanzi.frances@epa.gov. A return email message will be sent acknowledging receipt of the comment letter.

Name _____

Address _____

City, State, Zip _____



Do you want to be added to EPA's mailing list? If so, please fill out this form and mail it back to us.

Name

Address



Please mail this to: Fran Costanzi
 EPA Region 8
 Mail code 8EPR-SR
 999 18th Street, Suite 300
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New Information
on the Midvale Slag
Superfund Site